

What is claimed is:

1     1.     A method of establishing adjacencies on a network, the method comprising, at a first  
2     node of the network,  
3     sending hello packets on the network;  
4     receiving hello packets from other nodes on the network on the basis of the received hello  
5     packets;  
6     sending a link-state packet without adjacency information and without an overload bit set;  
7     interrogating a link-state adjacency table and, when only one adjacency is listed in the link-  
8     state table, sending a further link-state packet with the adjacency information and the  
9     overload bit set; and  
10    on convergence of a forward cache, sending a further link-state packet with adjacency  
11    information and without the overload bit set.

1     2.     A method according to claim 1 wherein the method is initiated when the first node is  
2     in a restart node.

1     3.     A method according to claim 2 wherein the restart node is a line card restart, a router  
2     restart or a download of a forwarding information base.

1     4.     A method according to claim 1 wherein the network uses Intermediate System-to-  
2     Intermediate System protocol and wherein the adjacency information is advertised in a Type  
3     Length Variable field of the link-state packet.

1     5.     A method of re-establishing adjacency in an inter-networked system, the method  
2     comprising:

- 3         i)     determining that adjacency establishment is required;
- 4         ii)    transmitting a message to discover neighboring network elements;
- 5         iii)   receiving messages from neighboring network elements; and
- 6         iv)    in response to the received messages, generating a link-state packet;

7           v)       sending the link-state packet without adjacency information and without an  
8                    overload bit set;  
9           vi)     interrogating a link-state adjacency table and, when only one adjacency is  
10                   listed in the link-state table, sending a further link-state packet with the  
11                   adjacency information and the overload bit set; and  
12           vii)   on convergence of a forward cache, sending a further link-state packet with  
13                   adjacency information and without the overload bit set.

1    6.       A computer-readable medium carrying one or more sequences of instructions for  
2    establishing adjacency in a network, which instructions, when executed by one or more  
3    processors, cause the one or more processors to carry out the steps of:  
4    sending hello packets on the network;  
5    receiving hello packets from other nodes on the network on the basis of the received hello  
6       packets;  
7    sending a link-state packet without adjacency information and without an overload bit set;  
8    interrogating a link-state adjacency table and, when only one adjacency is listed in the link-  
9       state table, sending a further link-state packet with the adjacency information and the  
10       overload bit set; and  
11    on convergence of a forward cache, sending a further link-state packet with adjacency  
12       information and without the overload bit set.

1    7.       A computer-readable medium as claimed in claim 6 further comprising instructions  
2    which, when executed by the one or more processors, cause the one or more processors to  
3    carry out the steps of:  
4       initiating the method when in a restart node.

5 8. A computer-readable medium as claimed in claim 6 further comprising instructions  
6 which, when executed by the one or more processors, cause the one or more processors to  
7 carry out the steps of:  
8 initiating the method when in a restart mode comprising one or more of the following:  
9 a line card restart, a router restart or a download of a forwarding information  
10 base.

1 9. A computer-readable medium according to claim 6 wherein the network uses  
2 Intermediate System-to-Intermediate System protocol and wherein the adjacency information  
3 is advertised in a Type Length Variable field of the link-state packet.

1 10. A computer-readable medium carrying one or more sequences of instructions for  
2 establishing adjacency in a network, which instructions, when executed by one or more  
3 processors, cause the one or more processors to carry out the steps of:  
4 i) determining that adjacency establishment is required;  
5 ii) transmitting a message to discover neighboring network elements;  
6 iii) receiving messages from neighboring network elements; and  
7 iv) in response to the received messages, generating a link-state packet;  
8 v) sending the link-state packet without adjacency information and without an  
9 overload bit set;  
10 vi) interrogating a link-state adjacency table and, when only one adjacency is  
11 listed in the link-state table, sending a further link-state packet with the  
12 adjacency information and the overload bit set; and  
13 vii) on convergence of a forward cache, sending a further link-state packet with  
14 adjacency information and without the overload bit set.

1 11. Apparatus for establishing adjacencies on a network, the apparatus comprising:  
2 means for sending hello packets on the network;  
3 means for receiving hello packets from other nodes on the network on the basis of the  
4 received hello packets;

5 means for sending a link-state packet without adjacency information and without an  
6 overload bit set;  
7 means for interrogating a link-state adjacency table and, when only one adjacency is  
8 listed in the link-state table, sending a further link-state packet with the  
9 adjacency information and the overload bit set; and  
10 on convergence of a forward cache, means for sending a further link-state packet with  
11 adjacency information and without the overload bit set.

1 12. Apparatus for re-establishing adjacency in an inter-networked system, the apparatus  
2 comprising:  
3 i) means for determining that adjacency establishment is required;  
4 ii) means for transmitting a message to discover neighboring network elements;  
5 iii) means for receiving messages from neighboring network elements; and  
6 iv) means for in response to the received messages, generating a link-state packet;  
7 v) means for sending the link-state packet without adjacency information and  
8 without an overload bit set;  
9 vi) means for interrogating a link-state adjacency table and, when only one  
10 adjacency is listed in the link-state table, sending a further link-state packet  
11 with the adjacency information and the overload bit set; and  
12 vii) on convergence of a forward cache, means for sending a further link-state  
13 packet with adjacency information and without the overload bit set.

1 13. An apparatus for establishing adjacencies on a network, the apparatus comprising:  
2 a network interface that is coupled to the network for receiving one or more packet  
3 flows therefrom;  
4 a processor;  
5 one or more stored sequences of instructions which, when executed by the processor,  
6 cause the processor to carry out the steps of:  
7 sending hello packets on the network;  
8 receiving hello packets from other nodes on the network on the basis of the received  
9 hello packets;

10        sending a link-state packet without adjacency information and without an overload bit  
11                set;  
12        interrogating a link-state adjacency table and, when only one adjacency is listed in the  
13                link-state table, sending a further link-state packet with the adjacency  
14                information and the overload bit set; and  
15        on convergence of a forward cache, sending a further link-state packet with adjacency  
16                information and without the overload bit set.

1    14.    An apparatus for establishing adjacencies on a network, the apparatus comprising:  
2        a network interface that is coupled to the network for receiving one or more packet  
3        flows therefrom;  
4        a processor;  
5        one or more stored sequences of instructions which, when executed by the processor,  
6                cause the processor to carry out the steps of:  
7        i)     determining that adjacency establishment is required;  
8        ii)    transmitting a message to discover neighboring network elements;  
9        iii)   receiving messages from neighboring network elements; and  
10       iv)    in response to the received messages, generating a link-state packet;  
11       v)     sending the link-state packet without adjacency information and without an  
12                overload bit set;  
13       vi)    interrogating a link-state adjacency table and, when only one adjacency is  
14                listed in the link-state table, sending a further link-state packet with the  
15                adjacency information and the overload bit set; and  
16       vii)   on convergence of a forward cache, sending a further link-state packet with  
17                adjacency information and without the overload bit set.